ABHAY MASIWAL

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SUMMARY

Hydrologist Water Resource Engineer with 7+ years of experience in hydrodynamic modelling, satellite remote sensing, and GIS analytics. Delivered flood forecasting, water quality prediction and glacial lake risk assessments in national projects with ISRO and NMCG. Seeking to apply data-driven modelling and geospatial expertise to advance sustainable water resource management.

PROFESSIONAL EXPERIENCE

Research Scientist, IIRS-ISRO: Dehradun, India **Aug 2023 – Present**

- Led a team at ISRO, under senior scientist guidance, in partnership with NMCG to deliver standardized river basin monitoring workflows.
- Delivered a hydrodynamic flood model for a 500 km Ganga River stretch, supporting disaster preparedness for 12M+ people.
- Prepared multi-source satellite datasets and built machine learning models for predicting DO Turbidity, improving monitoring temporal resolution to 6-day intervals and enabling near real-time water quality assessments.

Assistant Professor, Delhi, NCR: **July 2017 – May 2022**

- Worked in **ABES, Ghaziabad** and **Galgotias University, Greater Noida**.
- Taught and mentored 500+ students in hydraulics, water resources, and GIS, building industry-relevant skills.
- Guided 10+ applied projects, including **flood modelling**, **river training work**, and rainfall–runoff simulation. **rainfall runoff modelling** using the **SCS-CN** methodology.

TECHNICAL SKILLS

Hydrodynamic Modeling: HEC-RAS, HEC-HMS, MIKE+, SWAT, SWMM, ANSYS-Fluent
GIS and Remote Sensing: ArcGIS, QGIS, Google Earth Engine (GEE), SAR Analysis
Programming and Analysis: Python
Applications: Flood Risk Mapping, Hydrological Modelling, Watershed Management, Water Quality Forecasting

EDUCATION

PG Diploma in RS & GIS (Water Resources), (IIRS-ISRO), Dehradun, Uttarakhand: **Aug 2022 – Jul 2023**

- SGPA: 9.07

M.Tech. in Hydraulic and Water Resources, Delhi Technological University (DTU), Delhi: **Aug 2015 – Jul 2017**

- CGPA: 8.95

B.Tech. in Civil Engineering, Kumaon Engineering College, Dwarahat, Uttarakhand: **Aug 2011 – Jul 2015**

- Percentage: 82.5%

KEY PROJECTS

Potential GLOF Modelling for High Risk Glacial Lake **2024**

Conducted under the directive of NDMA (National Disaster Management Authority).

- Part of the core team that conducted field visits to **Panikar Glacial Lake** and **Vasudhara Glacial Lake**.
- Performed **Dam Break Analysis** simulations for lake breaching scenarios.
- Featured in a media report: *Times of India Article*.

Habitat Hydrodynamic Modelling for E-flow Assessment **2023**

Ecological flow assessment for Mahanadi River using advanced hydrodynamic modelling techniques.

- Developed comprehensive HEC-RAS models for ecological flow determination.
- Integrated ArcGIS spatial analysis for habitat suitability assessment.

Flood Hazard Zonation Using Time Series Analysis **2023**
Advanced flood risk mapping for Chindwin river basin using satellite imagery and machine learning.

- Implemented SAR data analysis and Google Earth Engine for flood detection.
- Developed automated thresholding algorithms for flood boundary delineation.

PUBLICATIONS

Variability of Hydro-Meteorological Fluxes in North West Himalayan Basins for Hydrological and Sustainability Studies **2024**
Review of hydrological parameters using satellite and modelled outputs.

- Published in The International Archives of the Photogrammetry Remote Sensing and Spatial Information Sciences.
- DOI: *http://dx.doi.org/10.5194/isprs-archives-XLVIII-3-2024-427-2024*
- Featured the variation of various hydrological parameters over the North-Western Himalayas.

Machine Learning Based Estimation of Water Quality Parameters Using Multisource Satellite Data **2025**
Water Quality parameter estimation using Machine Learing model

- Abstact accepted in conference of AIEO.
- *https://ai4eo2025.irisa.fr/conference-posters/*

Bathymetric Survey of Panikhar Glacial Lake, Kargil, Ladakh **2025**
Bathymetric survey of Panikhar Glacial lake, Kargil, Ladakh and its volume computation as of 2025

- Compiled an internal NDMA report documenting lake volume and geometric characteristics to assess potential disasters and support risk mitigation strategies.
- *IIRS/WRD/Report/USDMA/377/2025*

Bathymetric Survey of Vasudhara Tal Glacial Lake, Chamoli, Uttarakhand **2025**
Bathymetric survey of Vasudhara Glacial Lake and its volume computation as of 2025

- Compiled an internal NDMA report providing lake volume and geometric characteristics to support disaster assessment and risk mitigation planning.
- *IIRS/WRD/Report/USDMA/375/2025*

ACHIEVEMENTS

- 1st Prize, IIRS Hackathon on Geospatial Research Problem: **Spatio-Temporal Mapping of Water Body**
- Winner, ESRI Story Map Contest 2024, *Ganga: Story of Civilisation*
- Gold Medallist in M.Tech. (Water Resources)
- GATE 2020 – AIR 1320 (Civil Engineering)

REFERENCES

- **Dr. Vaibhav Garg**, Scientist, IIRS-ISRO vaibhav@iirs.gov.in
- **Dr. Pankaj R Dhote**, Scientist, IIRS-ISRO pdh@iirs.gov.in